

The topic for this week is **Fourier Series**.

Readings: Riley, Hobson and Pence - Chapter 12

Boccio - 005_FourierSeries.pdf

http://chaos.swarthmore.edu/courses/Physics50_2010/005_FourierSeries.pdf

Fourier Series Problems (just integrals)

- 12.05 $f(x) = x$
- 12.06 $f(x) = 1-x$
- 12.09 $f(x) = \exp(x)$
- 12.14 $f(x) = |x|$
- 12.16 $f(x) = \cosh|x-1|$
- 12.18 $f(x) = x^2$
- 12.20 $f(x) = |\sin(x)|$
- 12.21 $f(x) = \cosh(x)$
- 12.22 Chopped Sine Wave

Also modify the MATLAB programs in the class notes to plot the results for 50 terms in the series for problems 12.09 and 12.20. Include the codes and final plots in your homework. You must use MATLAB for this exercise. I want to see that you know how to do it.

You can use tables, calculators or Mathematica to do integrals.

After these problems you will certainly know how to compute a Fourier series!!!